

## AIR PROTECTION FROM POWER INDUSTRY EMISSIONS

### 1.5. Technologies of organic fuel combustion at TPPs with the lowered level of harmful emissions into atmosphere

#### 1.5.5. Efficient reduction of nitrogen oxide emissions in the boiler furnaces by means of aerodynamic optimization of the staged fuel combustion

##### Conclusions to it 1.5.5

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1. In process of the staged combustion of different fuel types, a key role belongs to optimization of the flame aerodynamics, especially, in the area of its interaction with the tertiary (secondary) blast.

2. To achieve the standard specific emissions of nitrogen oxides, reliability and economic efficiency of the boilers, tertiary (secondary) blast jets should have a high flow velocity – above 45 ... 50 m/s (at proportion of the arranged air rate of 0,25 ... 0,4) and they are to securely cover the part of the furnace section, in which the burning down flame goes up.

3. Of great importance are the following: a significant slope down of blast nozzles (except for the furnace with the U-shaped flame) and direction of nozzle axes under the op-

posite-biased scheme of jets in the horizontal projection of the furnace. At the same time mixing of reagents intensifies and trajectory of the flame motion increases.

4. Successful introduction of oil combustion technology in the direct-flow vortex flame with a long-lasting provision of the rated heat capacity at PTVM boilers allows to use a reliable reserve fuel - oil at these boilers at TPPs in the central regions of Russia.

5. It seems appropriate at certification of oil-gas direct-flow burners to consider their oil firing features, which should be reflected in the certification documents and taken into account when preparing operational manuals.